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RE-EDUCATION TECHNIQUES IN SPEECH CORRECTION

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INTRODUCTION

Although no sharp line of distinction can be drawn, the whole field of speech education may be divided into two areas, based on specific objectives. First, the utilitarian, which aims to develop speech as a tool in shaping out the best possible vocational and social adjustment. Second, the intellectual and cultural, which, in addition to the first, seeks to make of speech, an instrument of achievement, enjoyment, or pleasure, both to the speaker and to the listener.

Three fairly well defined avenues of approach to this objective lie open before the speech therapist.

The first may be thought of as the clinical. The objective is to discover the nature and cause of the defect, in terms of the biological characteristics of the patient. The remedy lies in the removal of the cause and the resolution of the disorder. Second, is the remedial. This procedure attacks the symptom. The third approach is by way of re-education.

The points of view, however, of the first two approaches, and the third, are radically different. The re-educator begins with the concept of speech as purely a social and intellectual phenomenon; and the recognition of the ability of the human organism to adapt biological mechanisms to purely social functions. In the absence of organic or structural anomalies, speech development becomes the progressive adaptation of ontogenetic functions to oral-patterned language. As a utility within the social group, these oral-patterns must be common or universal within the group, and similar in form or sound, when used by each different member of the group. Moreover, from an educational point of view, this oral language, as a form of social behavior, may be taught. Even in cases of organic or structural anomalies, or handicaps, there is always a certain optimum of performance within the range of the handicap of which the clinician and remedialist alike, must be aware if they are to pursue any constructive measures of correction.

Practically stated, the principle of re-education is based on the assumption, that, if the larynx and the articulators function normally in biological processes, and the hearing is somewhere near normal, speech should develop as a matter of course. Therefore, if disorders appear, their causes must be sought in the nature of the speech,

itself, as a social phenomenon, or in the manner of its acquisition, or both. In stuttering, for example, where the individual has acquired the oral-patterned forms of language, (i. e., words, phrases, and sentences with their inflections) yet cannot use them in conversation, the nature of speech as a social phenomenon must be examined. In the dyslalias, where the oral language is produced readily, or fluently, in conversation, but where the oral-patterned forms, particularly the phonics, and phonic combinations, are not accurately produced, then the cause should be sought in the manner of the acquisition of speech.

Several factors in this manner of acquisition may be stated as a basis for procedures in this dyslalia re-education:

1. Earliest and articulative sounds produced by the infant, are in no way related to speech.
2. These first sounds are incidental to biological laryngeal and digestive function.
3. Within the scope of the random oral sounds produced in infant babblings, there are likely present the phonic elements of every language.
4. In learning speech, the infant retains the appropriate, and discards these sounds inappropriate to the oral-patterns of the speech of his environment.
5. The normal functional movements of mastication and swallowing, performed by the articulators, are adequate for the production of any consonant phonic element.
6. Vocal sounds naturally produced in yawning, coughing, groaning, clearing the throat, and in other non-speech laryngeal activity are adequate for the vowel forms used in speech.
7. From 5 and 6, it may be concluded that any failure to achieve the customary oral-patterns in speech is due to inadequate discrimination of audible sensations, or to cessation of the ability to discriminate such sensations or yet, to misperception of those sensations.

From this last point, it is obvious, that in re-educational procedures for the correction of the *functional* dyslalias, the specific purpose of the techniques should be to increase the ability to discriminate between different sounds that reach the ear. Mere remedial muscular exercises are not indicated, since, in performing their digestive function, the tongue, lip, jaw, and other mouth organs make all the movements necessary to speech. Neither vocal sound, speech articulative movement, nor auditory experience,—all elements of every act of speech,—no matter how rudimentary, is present in such drills.

It is not, of course, the immediate objective of this paper to criticize any clinical practice of responsible specialists nor to make a case for the principle of re-education in dealing with speech disorders. The purpose is to discuss simple techniques, based on the principle

of re-education which we have found effective in dealing with vocal, articulative and fluency problems. In every case, the optimum of performance, within the disorder, is made the basis for improvements.

ILLUSTRATIVE TECHNIQUES

Dysphonias: In complete loss of vocal tone, where laryngoscopic examination discloses no organic or pathological disorder, the expedient of coughing or clearing the throat may be used to indicate to the pupil, that the power to produce vocal sound has not been lost. If, within the sounds thus produced by the pupil, vocal tone can be detected, the performance which produced it should be repeated till the pupil, himself, is conscious of it and can reproduce it at will. Such resultant sound forms the basis for the usual exercises for voice improvement.

Eileen, at 14, lost her voice at fairly frequent but irregular intervals, without any apparent laryngeal disorder. On clearing her throat, and thus hearing vocal tone, she recovered within an hour; instead of an interval of several days, as had been customary. Though the device mentioned proved effective in subsequent attacks, the fact that the attacks did recur indicated the need of psychiatric treatment.

In functional chronic hoarseness, the same procedure is indicated, with the throat clearing act offering the better possibility for tone production since if the intonation is sustained, it frequently trails off into some form of nasal phonic of fair quality.

Francis, at the age of 12, had lost the ability to speak aloud during an attack of laryngitis. When he recovered, his voice was of a hoarse quality. Clearing the throat revealed the ability to get a brief "ng" phonic. This sound was separated by a time interval from the throat-clearing device; then, by repetitions he soon learned to make the "ng" phonic at will. Vocal exercises were built on this achievement.

Functional high pitch in women's voices, where the quality is of a thin, piping, timbre, with inaudible fundamental tone and with little volume (like falsetto), the experience of a more normal quality may be achieved through coughing, clearing the throat, or more frequently, a vigorous yawn. Frequently, the disorder seems to be due to nothing more than the *loss of experience* of using the normal voice in speech situations.

Elizabeth, 18, had that type of voice. When a disgusted college teacher demanded to know whether she intended to carry such a voice through life, he received the reply: (thin characteristic voice) "What do you want me to do, (then with a deep vigorous contralto) TALK LIKE THIS?"

A naturally high-keyed man's voice is no handicap. It is only when it is habitually weak in volume, coupled with an effeminate mannerism (and with higher overtones predominating) that it subjects him to ridicule. A falsetto man's voice on the other hand,

is a positive vocational handicap, to say nothing of its social inadequacy.

Andrew, at 14, lost the ability to speak aloud during an attack of laryngitis. Instead of recovering his normal voice, he developed a weak falsetto. He appeared at the age of 27, for assistance. Coughing, followed by vigorous clearing of his throat revealed to him a typical man's quality. In two half-hour lessons, he developed, or recovered, a voice of fair male timbre, which he used when in conference with his instructor. However, the abnormal voice had become so much a part of his concept of his social personality, that it was months before he could bring himself to use the normal when talking to his associates.

Irene, 33, had a voice of mixed pitch. Laryngoscopy disclosed one vocal band slightly thicker than the other, or slightly relaxed. Voice had been of this defective quality as long as she could remember. Coughing and clearing of the throat was ineffectual since the quality thus produced did not differ greatly from the defective voice. Vocalized yawning, with its inflected pitch changes was indicated. The degree of intensity was reduced till the tone was scarcely more than a whimper. Here was found the optimum on which the progressive exercises were built.

The same principle of optimum performance is applied as a beginning on which to build constructive exercises for the re-education of defectively weak, as well as defectively loud voices. The same is true of nasal quality.

From the point of view of re-education, therefore, defective voices may be improved by discovering among all the random non-speech sounds produced by the larynx, the discernible optimum. Then, when he can repeat it at will, improvement is secured through customary voice training exercises.

Dyslalias: For the re-education of the dyslalias, the same principle as that used for faulty voices, applies. Among the random, non-speech sounds produced by the articulators, with or without the accompaniment of vocal activity, there lies a discernible optimum, similar to the desired oral-pattern, for which an inaccurate one is used. The pupil is taught to repeat this optimum until he can produce it, and imitate himself at will. This rudimentary achievement is then woven into random combinations of articulative utterances. If such complex utterances are formalized, or arranged in groups of similars, the pupil soon learns to perform them at will, without the aid of the instructor. When this point has been accomplished, these "nonsense" combinations are repeated side by side with the speech oral-patterns with which they are homophonous. Thus the pupil learns to discriminate the appropriate sound combinations and subsequently discards the inappropriate.

It may be observed that this principle rejects, as having no utility, the practice of drilling words containing the defective sounds. If the pupil cannot produce the appropriate sound at will, he cannot,

usually, enunciate in the drill those words which form a part of his own speech vocabulary. If he has learned to produce the desired sound, at will, and can produce it in words, he does not need the drill on words. And, as for alliterative sentences, or tongue-twisters, it seems little short of vicious to subject a child with an "s" lisp to such an abomination as, "Sam Slosson's sister was successful on sixteen successive Saturdays, in stitching slits in the school stage scenery faster than Bessie Strauss."

In some persons, structural anomalies of the articulators, produce no dyslalias of any kind. Poor occlusion, loss of teeth, injuries to the tongue, retreating lower jaw, protruding lower jaw, and combination of these, have not prevented the development of good speech, in numbers of cases. This fact offers encouragement to a favorable prognosis in correction of dyslalias, especially where the pupil experiences no difficulties in chewing and swallowing food. Articulator exercises are indicated only where there are poor muscular co-ordinations in eating. Even in such cases, exercises should be confined to those movements that are found to be normal to mastication and swallowing. Stimulating the tongue to lick the lips, and to chew gum (for instance) seem more directly useful, than thrusting the tongue out and in,—a movement which finds its greatest and, perhaps, its only utility in the expression of impudence.

Stuttering: The fact that so many different varieties of stunts,—that skeleton in the closet of our profession—have proved effective in curing some cases of stuttering, is explainable in terms of re-education, whether or not the specialist has intended applying such principles. One is reminded here of the Dissertation on Roast Pig, in which Hopi thought that the flavor of the pig was due to the burning-down of the house.

Without going back to the origins of speech, several aspects of its current nature may be stated as a basis of re-educational procedures in dealing with stuttering.

1. Speech is a social phenomenon.
2. Its genesis lies in the adaptation of laryngeal and articulative sounds to social uses.
3. Its utility comes from the impulse or desire to direct, modify, or influence the behavior of others.
4. When this impulse or desire is satisfied, or the objective achieved, a pleasurable feeling is experienced by the speaker.
5. This pleasurable experience becomes the motivating factor to further excursions in speech.
6. When the impulse is interrupted, the desire thwarted, or when the speech fails of objective, or the social response is inappropriate, an unpleasant reaction is felt by the speaker, which becomes a deterrent to subsequent attempts.
7. No oral activity can be considered speech, in the social sense, which does not fit the oral-pattern customs of the group for which it is intended.

These seven aspects of the nature of speech development should be constantly in mind in applying the principle of re-education to the correction of stuttering. The effectiveness or failure of any one of a number of current procedures may be critically appraised from this point of view. Every device which has resulted in a cure in improvement or even in a momentary cessation of symptoms, coincide at some point with this outline. Permanent results are due to the high percentage of coincidence of the procedure with the nature of speech and its development. And conversely, when a method does not produce favorable results, the simple reason is that it is not speech, or not like speech in form or structure. Its melody is not that of speech, nor is it effective for communication.

The various distractions which get such sensational emphasis through the press are not speech. Singing is not speech, beating time is not speech, dropping initial consonants is not, neither are "octave twist," inflection of vowels, pseudo-stuttering, crawling on hands and knees, or using unnatural vocal quality. In the occasional instances when some such device seems to prove effective, the explanation is that in the procedure somewhere, there is conformity to the laws of learning speech. I strongly suspect that not infrequently, this conformity comes through the manner of the instruction rather than in any virtue in the specific exercises.

The same explanation may be urged for techniques based on clinical investigation of individual characteristics. For instance, the cures that have come through establishment of a normal cerebral dominance; modification of diet; bio-chemical adjustment; strengthening of verbal imagery; or psychoanalysis, require no special theory to make them explicit. And, in the many cases where they do not produce the desired result the reason is equally clear, viewed in the light of the principle of re-education.

Other theories, based on biotic consideration, such as the nature of the physical habitus, glandular secretions, or weakness of the neuro-muscular mechanism of speech, may well be re-examined, taking into consideration the social nature of the phenomenon of speech.

Working, as they do, with man—the intelligent social organism, as well as a biological one, and with speech—a social phenomenon, as well as a physiological, investigators should be cautious lest they ensnare themselves in the *post hoc, ergo propter hoc* fallacy. It is not beyond possibility, that some of the phenomena advanced as causes may prove to be other symptoms of some lack of social integration, of which stuttering is also a symptom.

In conclusion, and with full recognition of the abilities and achievements of the specialists who have labored to find dependable procedures for the relief of stuttering, my own experience has demonstrated that results are more satisfactory when my techniques conform to the concept of speech as a social phenomenon; and when the materials used and the manner of their application call forth in the stutterer those experiences and reactions common to the natural development of speech in infancy and early childhood.

INTELLIGENCE RATING OF SEVERE COLLEGE STUTTERERS COMPARED WITH THAT OF OTHERS ENTERING UNIVERSITIES

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Stutterers and stammerers (considered in this paper under the one general head) have always been considered in a class apart from other speech defectives, due to the personality, emotional and mental aspects of the disturbance. The question has already been raised as to whether correlation with their general intelligence level exists.

Scripture mentions that in one "case the stuttering was associated with slowness of thought: sometimes the hesitation in speech seemed to be a cloak for hesitation in thought."[1]

Travis reports that the stutterer "reflects a certain lack of maturation of the central nervous system."[2] More specifically he states that "most surveys report that special classes contain more stutterers than do the regular classes. This would indicate that there is some relationship between mental deficiency and stuttering."[3] But he cautions against giving too much reliance to this "apparent relationship between defective intelligence and stuttering, because all of us know of many very superior children and adults who stutter."[4]

Travis presents the following I. Q. distribution (name of intelligence test scale not given) of seventy-three public school stutterers (age range not given) as determined by the Child Guidance Department, Madison, Wisconsin:

60–69	70–79	80–89	90–99	100–109	110–119	120–129	130–139
1.4%	2.7%	12%	19%	37%	16.4%	8.2%	1.4%

He calls attention to the "remarkably symmetrical distribution of this grouping."[5]

As to the college level, Travis reports that "the stutterers in the University of Iowa have been distinctly superior to the average

[1] SCRIPTURE, E. W. "Stuttering, Lisping and Correction of the Speech of the Deaf." 1926. p. 20.
[2] TRAVIS, L. E. "Speech Pathology, A Dynamic Neurological Treatment of Normal Speech and Speech Deviations." 1931. p. 95.
[3] Travis, ibid., p. 97.
[4] Travis, ibid., p. 98.
[5] Travis, ibid., p. 101.

college student in intelligence,"[5] And offers as explanation that "the selective factor at work operates more completely in the case of the stutterer who hesitates to go to college with two handicaps, stuttering and mental dullness."[5]

Stinchfield in discussing stuttering among children mentions that it may be found throughout the complete mental range.[6] She quotes the studies of the White House Conference of 1930, compiled by West, Travis and Camp, where "they found that the median I. Q. for stutterers was 96.5 in a group of 4,059 stutterers."[7] Neither age range nor test scale used was stated. Stinchfield reports in conclusion "the White House Conference Report found that . . . stutterers are not mentally retarded."[7]

It was the purpose of our present study to ascertain additional facts bearing on this question, as it pertains to the general run of college level students. The cases used were from the Ohio State yearly report of the University Speech and Hearing Clinic, which tests all incoming students, of which there are from 3,000 to 4,000 each year.[8]

The intelligence ratings are from the Ohio State Psychological Examination also administered to all incoming students. The score is given in percentiles, based on the student's position "in a group of 100 freshmen chosen at random from all entering native-born freshmen."[9] Based on the percentile rank, class ranks are given as follows:

Class I—5% of the highest scores, percentiles 96–100.
II—the next 20% of the highest scores 76–95%iles.
III—the middle 50% of average scores 26–75%iles.
IV—the next 20% of lower scores 6–25%iles.
V—the 5% of the lowest scores 1–5%iles.

The intelligence records also include reading test percentiles from a test administered at the same time. This data is only slightly touched upon in this study.

Within the university, statistical study has shown the validity of the test in predicting scholarship for students remaining a full year in school to be above .60.[10]

The total number of stutterers included in this study was 190. Of this 131 were recommended for immediate attention (marked 'R' in the tables). The 59 marked 'C,' were those whose first treatment

[5]Travis, ibid., p. 101.
[6]STINCHFIELD, SARA. "Speech Disorders." 1933, p. 122.
[7]Stinchfield, ibid., p. 123.
[8]Intelligence Rating Report of Incoming Students, issued quarterly to the Ohio State University Deans of Colleges and Heads of Departments.
[9]TOOPS, HERBERT A. "A Minimal Guidance Program for Secondary Schools." Ohio High School Bulletin, No. 9, p. 6.
[10]TOOPS, HERBERT A. "1934–35 Tenth Annual Report of the Committee on Intelligence Tests for Entrance." Ohio College Association Bulletin, No. 97.

was clinical and by consultation only. They were less desirous of help through class work, either by reason of having resigned themselves, of a cynical disbelief in possibility of aid, of satisfaction with present status, or of heavy required schedules which precluded immediate speech class work. The statistical tables also show the figures for those 79 students of the original groups who registered in one or more classes, for speech work. The 'R' and 'C' groups from which they came, is also shown.

TABLE I

INTELLIGENCE DISTRIBUTION OF STUTTERERS

Class	Intelligence Percentile	Total N Stutterers	Recommended R-Group	Recommended C-Group	Those Who Took Class Help	R Group	C Group
I	96–100	14	9	5	6	4	2
II	91–95	10	7	3	6	5	1
	86–90	15	11	4	7	6	1
	81–85	7	5	2	3	3	
	76–80	15	10	5	6	3	3
III	71–75	13	8	5	7	5	2
	66–70	10	7	3	2	2	..
	61–65	9	5	4	1	1	..
	Median	—	—		—		
	56–60	6	6	..	3	3	..
	51–55	12	9	3	7	7	..
	46–50	8	5	3	3	3	..
	41–45	14	9	5	6	5	1
	36–40	16	12	4	5	5	..
	31–35	6	3	3	3	2	1
	26–30	11	8	3	3	3	..
IV	21–25	7	6	1	5	5	..
	16–20	3	2	1	1	1	..
	11–15	6	3	3	1	..	1
	6–10	2	2	..	2	2	..
V	1–5	6	4	2	2	2	..
	Total	190	131	59	79	67	12

Table I shows the intelligence percentile distribution of these six designated groups:

1. The total number of stutterers in the study—190.
2. The total 'R's—131.
3. The total 'C's—59.
4. Those who enrolled for class as well as clinical help—79.
5. The 'R's of this class group—67.
6. The 'C's of the class group—12.

This table does not present the smooth distribution that the test is set up to give in the general college population. There is a definite upward skewing. Indeed Table III shows more than 86% of the cases in the three highest quartiles. Table II shows both the mean and the median of the stutterers to be above the average; the mean varying from 7.2% to 21.0% above, in the six groups. Table IV, giving the distribution by classes, shows the stuttering group to be higher in intelligence than the average.

TABLE II

MEASURES OF CENTRAL TENDENCY

	Median	Mean
Total Stutterers	58%ile	57.2%ile
R-Group	58%ile	57.5%ile
C-Group	63%ile	56.6%ile
Students Who Took Class Work	58%ile	59.2%ile
R-Group	53%ile	57.1%ile
C-Group	78%ile	71.0%ile

It will be seen from this table that the general average of intelligence was well above that of the university as a whole. That is especially true for those of the C-group who finally took speech classes, though they first thought for various reasons, that they could do nothing about it. Those of this group who failed to take proffered class help, in spite of all reasoning by the Junior Dean and clinician, were the only ones whose intelligence level was below the average.

TABLE III

PERCENTAGE DISTRIBUTION BY QUARTILES

	Highest ¼ Q^4	Q^3	Q^2	Lowest ¼ Q^1
Total Stutterers	32.1%	26.2%	28.9%	12.6%
R-Group	32.0%	26.7%	28.2%	12.9%
C-Group	32.2%	25.4%	30.5%	11.8%
Students Who Took Class Help	35.4%	25.3%	25.3%	13.9%
R-Group	31.3%	26.8%	25.3%	14.9%
C-Group	58.3%	16.6%	35.4%	8.3%

The superior intelligence of the stutterers is more strikingly shown by this table. Especially when we compare the highest and lowest quartiles; 32% of them are among the upper high ranking quarter of university freshmen, whereas only 12% fall in the lowest quarter.

TABLE IV

PERCENTAGE DISTRIBUTION BY INTELLIGENCE RANK CLASSES

	I (Highest)	II	III	IV	V (Lowest)
Total Stutterers	7.3%	24.7%	55.2%	9.4%	3.1%
R-Group	6.8%	25.1%	54.9%	9.3%	3.0%
C-Group	8.4%	23.7%	55.9%	8.4%	3.3%
Students Who Took Class Aid	7.5%	27.8%	56.9%	11.3%	2.5%
R-Group	5.9%	25.3%	53.7%	11.9%	2.9%
C-Group	16.6%	41.6%	33.3%	8.3%	.....
Normal Distribution	5%	20%	50%	20%	5%

The retests are also included here for facts pertaining to any possible raising of intelligence percentile. Only 31 of the original group took retests. Of these, 58% had a higher ranking on the retest.

As to the reading test, of the 168 taking it, 56% had a higher intelligence ranking than reading ranking.

TABLE V

RETESTS

	N	N R Lower	N R Lower	N R Same
Intelligence	31	18 58%	10	3
Reading	24	14	10	....

TABLE VI

COMPARISON OF INTELLIGENCE AND READING SCORES

	Original Test	Retest
Intelligence Higher than Reading	94 (49.4% of 190) (55.9% of 168)	13
Intelligence Lower than Reading	68	17
Intelligence Same as Reading	6	..
No Reading Score	22	1
Total	190	31

CONCLUSIONS

The data covered by this study was not exhaustively treated statistically; but the figures given show that the group of stutterers rank definitely higher in intelligence than the general freshman college population. It would be interesting to see how this prognostication is borne out in their scholarship. This higher intelligence of college stutterers may be due to the selective factor mentioned by Travis.

NOTE

By the Director of the Speech Clinic, Ohio State University

In order that the data above may be better understood, some explanation of the procedure with stutterers at Ohio State University is called for. The Speech Department conducts a Speech Clinic examination which is carried out in connection with the health line examination of the Student Health Service. Like the Intelligence Test, it is supposed to reach, therefore, every student entering the

university. This Speech Clinic examination has been carried out every year for over half a decade now, and hence runs with fair smoothness.

However, in the Autumn Quarter over 3,000 students pass through at the rate of from 60 to 90 an hour, or at least one every minute. Naturally each student spends around forty minutes. In that time he is given a complete 2A audiometer hearing test, and the attempt is made to discover any of his speech or voice deviations from the most effective standard any cultured college trained individual should manifest. For from its inception, the first two years of speech work in the former Phonetics Division (now a part of the Speech Department) was based upon a pragmatic philosophy. So whereas many universities conducted their classes for those registering willy nilly, who would inevitably be, largely those whose speech was best, at Ohio State University it was felt those whose speech was worst should be given first attention.

Everybody with experience knows these are precisely the ones who try to "cover up" and to escape. Naturally it is therefore not always easy to discover them in such a short period. And furthermore, in order to move them through the line that fast, it becomes necessary to have a large number of examiners. Since the project has always been carried out "as a labor of love" by members of the staff of four without calling on the university for a cent to finance it, the rest of the examiners had to be student clinicians, most of whom, especially at the beginning of the year, were so inexperienced that their judgment was bad, and they only detected the most glaring cases.

For the data shown above, however, this much may be said. Ostensibly every individual is included who gets as far in his school work as the university, if he has any tendency toward serious stuttering. In 1933 there were 128 such out of roughly 3,000 students. Actually, our experience shows, that a large part of the most serious cases escape; either because they fail to appear in line, or slip by; because they successfully "cover up" in the moment or two before the examiner; or because the unpaid examiner is not competent enough to detect the condition.

Furthermore our experience is that the elementary and high school both tend to give them a grade and pass them on, if only because of sympathy for the condition; so that the "weeding-out" really comes in the freshman college year, by reason of the "hard-boiled" attitude of universities which therein are sharply distinguished from both the former. We would therefore be inclined to doubt any material selective factor at work in the educational system up to university entrance, which would raise the intelligence level of the group very appreciably. Hence if we did actually detect every stutterer entering the university, and no selective factor were at work, the data is most interesting, especially in its manifestations as one cross section for this age level.

JOHNSON, W. *Influence of Stuttering on the Attitudes and Adaptations of the Stutterer.* Bibliog. J. Social Psych., (1934), 5, 415–420.

JOHNSON, W. *An Interpretation of Stuttering.* Quart. J. Speech, (1933), 19, 70–76.

JOHNSON, W. AND KNOTT, JOHN R. *The Moment of Stuttering.* J. Genet. Psychol., (in press).

JOHNSON, WENDELL AND BROWN, SPENCER. *Stuttering in Relation to Various Speech Sounds.* Quart. Journ. Speech, XXI, (1935), 481–496.

JOHNSON, WENDELL. Stuttering in the Pre-school Child. Univ. of Iowa, (1934). Univ. of Iowa Ch. Welfare Pamphlet 37.

JOHNSON, WENDELL AND KNOTT, JOHN. *A Systematic Approach to the Psychology of Stuttering.* J. Genet. Psychol., (in press).

KNOTT, J. R. AND JOHNSON, W. *The Factor of Attention in Relation to the Moment of Stuttering.* J. Genet. Psychol., (in press).

KNOTT, J. R. AND JOHNSON, W. *An Interpretative Demonstration of Ten Observable Facts about Stuttering.* Paper read before the A. S. C. A., Chicago, (Dec. 31, 1935), Proc. A. S. C. A. (in press).

KNOTT, J. R. *A Study of Stutterer's Stuttering and Non-stuttering Experiences on the Basis of Pleasantness and Unpleasantness.* Quart. Journ. Speech, (1935), 21, 328–330.

KOPP, G. A. *Metabolic Studies of Stutterers: (1) Biochemical Study of Blood Composition.* Speech monographs, (1934), 1, 117–132.

LAMBECK, A. *Errors Due to Stammering in Stuttering School Children.* Ztschr. f. Kindforsch., (1933), 41, 429–438.

MALHANT, M. *Pathogenesis and Therapy of Stammering: Clinical and Physiopathologic Study.* Hyg. Ment., (May, 1934), 29, 101–118.

MARINESCO, G. *Stuttering and Conditioned Reflexes.* (Comment on Malhant's article.) Hyg. Ment., (Feb., 1935), 30–42, 44.

MARTIN, RALF. *Summation in the Two Halves of the Retina in Relation to Stuttering.* Master's thesis, (1933), University of Iowa.

MILISEN, R. AND JOHNSON, W. *A Comparative Study of Stutterers, Former Stutterers and Abnormal Speakers whose Handedness Has Been Changed.* Archives of Speech, (1936), 1, 61–86.

MILISEN, ROBERT. *A Further Comparative Study of Stutterers, Former Stutterers and Changed Handedness Normal Speakers.* (Paper read before the A. S. C. A., Chicago, (Dec. 31, 1935). Proc. A. S. C. A., in press.)

MILLARD, L. W. Stammering. Millard Inst. of Normal Speech, Milwaukee, Wis.

MOLHANT, M. *The Relation of Stuttering to Cerebral Associated Reflexes and Conditioned Reflexes.* Hyg. Ment., (1935), 30, 153–6. (Reply to Marinesco.)

MORELY, ALONZO. An Analysis of Predisposing Factors in the Symptomatology of Stuttering. Psychol. Monog., (in press).

MOSCISKER, E. *Pathogenesis of Nostril Symptom in Stutterers.* Monatschr. f. Ohrenh., (Jan., 1935), 69, 106-110.

MUSSAFIA, MLLE. *Stuttering, its Development and Treatment according to the School of Fröschels in Vienna.* Scalpel, Brussels, (1934), 87-510.

NORTH, E. A. *Stuttering: Discussion of Cause and Treatment.* J. Med., (1933), 14, 316-322.

PATTON, EDITH. Experimental Treatment of Stuttering in a Group of Young Children. Master's thesis, Univ. of Iowa, (1935).

PATZAY-LIEBERMANN, L. *Movements of Stammerers.* Ztschr. f. Kinderforsch., (1933), 42, 365-368.

PETERS, C. A. *Public Speaking: A Therapeutic Procedure in the Re-training of Stutterers.* Quart. Jour. Speech, (Feb., 1933), 19, 64-70.

ROBBINS, SAMUEL D. *The Role of Rhythm in the Correction of Stammering.* Quart. Journ. Speech, (1935), 21, 331-343.

SATTERFIELD, V. *Psychiatric Aspects of Stammering.* J. Mo. Med. Assn., (March, 1934), 31, 117-121.

SCIENTIFIC AMERICAN. *Stuttering Cured by Hypnotism.* (1934), 151-311.

SCHULMANN, A. *Constitutional Analysis of Stuttering.* Budapesti orvosi vjsog. (Jan. 17, 1935), 33, 49-51.

SEEMANN, M. *Somatic Findings in Stutterers.* Monatschr. f. Ohrehn., (Aug., 1934), 68, 895-912.

SETH, G. *An Experimental Study of the Control of the Mechanism of Speech, and in Particular of that of Respiration, in Stuttering Subjects.* Brit. J. Psychol., (1934), 24, 375-388.

SHACKSON, ROLLAND. *An Action Current Study of Muscle Contraction Latency with special reference to Latent Tetany in Stutterers.* Arch. Speech, (1936), 1, 87-111.

STROTHER, CHARLES. A Study of the Extent of Dyssynergia Occurring During the Stuttering Spasm. Psychol. Monog., (in press).

SHAW, S. S. A Photographic Analysis of Tonal Attacks and Releases by Stutterers. Master's thesis, (1933), Univ. of Iowa.

SISTER, MARY ROSE ELIZABETH. *What Hope is There for the Stutterer?* Bibliog. Cath. Ed. R., (Feb., 1933), 31, 108-115.

SMIRNOVA, A. M. *Pathogenesis, Treatment and Prophylaxis of Stuttering in Children of School Age.* Sovetsk, Nevropatol., (1934), 3, No. 7, 74-94.

SOLOMON, J. C. *Stammering, Stuttering, Pediatrician's Responsibility.* Am. J. Dis. Child., (May, 1933), 45, 1079-1086.

SOLOMON, M. *Stuttering, Nature and Mechanism.* Illinois M. J., (April, 1934), 65, 329-335.

SOVAK, M. *Vegetative Nervous System in Stutterers.* Monatschr. f. Ohrehn., (June, 1935), 69, 666–680.

SPRING, W. J. *Words and Masses: Pictorial Contribution to Psychology of Stammering.* Psychoanalyt. Quart., (April, 1935), 4, 244, 258.

STEER, MAX AND JOHNSON, W. *An Objective Study of the Effect of Social and Non-social Situations upon the Severity of Stuttering.* J. Abn. and Soc. Psychol., (in press).

STEER, M. D. *A Qualitative Study of Breathing in Young Stutterers, a Preliminary Investigation.* Speech Monog., II, (1935), 1–5.

TARTAKOVSKY, I. I. *Psychology of Stuttering and Collective Psychotherapy.* Russia, (1934), pp. 68.

THAYER, L. R. The Relationship Between Physical Habits and Stuttering. Master's Thesis, (1933), Univ. of Iowa.

TRAVIS, LEE E. AND LINDSLEY, D. B. *Action Current Study of Handedness in Relationship to Stuttering.* J. Exper. Psychol., (April, 1933), 16, 258–270.

TRAVIS, LEE E. *A Neurological Consideration of Stuttering.* Spoken Word, (1933), 1, 8-11.

TRAVIS, LEE E., MALAMUD, W. AND THAYER, L. R. *Relationship between Physical Habits and Stuttering.* J. Abnorm. (Soc.) Psychol., (July-Sept., 1934), 29, 132–140.

TRAVIS, LEE E. AND JOHNSON, W. *Stuttering and the Concept of Handedness.* Bibliog. Psychol. Rev., (Nov., 1934), 41, 534–562.

TRAVIS, VERA. *A Study of the Horizontal Dysintegration of Breathing During Stuttering.* Arch. of Speech, (1936), 1, 157–169.

VAN RIPER, C. *Effect of Devices for Minimizing Stuttering on the Creation of Symptoms.* Paper read before the A. S. C. A., Chicago, (December 31, 1935). Proc. A. S. C. A. (in press).

VAN RIPER, C. *The Influence of Empathic Response on Frequency of Stuttering.* Psychol. Monog. (in press).

VAN RIPER, C. AND HULL, C. J. *Influence of the Situation on Frequency of Stuttering Spasms.* Psychol. Clinic, (in press).

VAN RIPER, C. *Symptomatic Treatment of Stuttering.* J. Abnorm. Psychol., (in press).

VIELA, A. *Respiratory Cure of Stuttering Case.* Rev. Franc. de Phoniatrie, (April, 1934), 2, 96–101.

VOELKER, CHAS. H. *The Visualization Treatment of Spasmophemia.* Med. Rec., (1935), 142, 272.

VON SARBO, A. *Nature of Stuttering.* Monatschr. f. Kinderforsch, (1935), 44, 119–133.

VON STOCHERT, F. C. *Psychogenesis of Stuttering.* Monatschr. f. Ohrenh. (August, 1934), 68, 913–919.

WARD, W. K. *Stammering.* Post-Grad. M. J., (April, 1934), 10, 140–146.

WERNER, R. *Neue Ursachenerkenntnisse und Erfolgsmoglichkeiten in der Verhutung und Heilung des Stotterns.* (New etiological knowledge and consequent possibilities for the prevention and cure of stuttering.) Halle: Akad. Verl., (1934).

WESTPHAL, G. *An Experimental Study of Certain Motor Abilities of Stutterers.* Child Dev., (1933), 4, 214–221.

ROESE, J. *Deafness in Relation to Stammering.* Internat. Zentrabl. f. Ohrenh. (1934), 39, 257–281.

TRAVIS, LEE E. *Dissociation of Homologous Muscle Function in Stuttering.* Arch. Neurol. Psychiat., (Jan., 1934), 31, 127–133.

PETERS, CLARENCE. *An Objective Study of the Mirror-Reading Ability of Stutterers and Normal Speakers.* Master's thesis, (1935), Univ. of Iowa, Archives of Speech, (in press).

PHONIATRY

EVETTS, E. T. Vocal Disorders. Toronto: Dent, (1933).

TARNEAUD, J. *Classification Depending on Objective Examination of Phonatory Organs.* Medicine, (Jan., 1935), 16, 75–80.

IMHOFER, R. *Phoniatric Aspects of Unilateral Recurrent Paralysis.* Ztschr. f. Laryng., Rhin., Otol., (1933), 24, 46, 54.

KOEPP-BAKER, HERBERT. *A Rare Type of Aphonia Organica.* Arch. Speech, (1936), 1, 231–247.

SCALVITTI, M. *Speech Influence of Diaphragmatic Motility on Laryngeal Movements During Respiration and Phonation.* Valsalva, (Dec., 1934), 10, 888–900.

WEST, ROBERT. *A View of the Larynx thru a New Stroboscope.* Quart. Jour. Speech, (1935), 21, 455–461.

BOREL-MAISONNY, S. *Normal and Pathologic Mechanism of Phonation seen thru Laryngoscope.* Rev. franc. de phoniatrie, (Jan., 1935), 3, 29–48.

CORNELLI, G. *Behavior of Subglottic Pressure During Phonation.* Arch. Ital. di otol., (1934), 45, 701–719.

SCURI, D. *Relation between Stuttering and Phonasthenia: Cases.* Rev. franc. de phoniatrie, (April, 1934), 2, 85–95.

SCURI, D. *Stammering and Phonasthenia.* Arch. Ital. di otal., (Nov., 1934), 45, 769–782.

SCURI, D. *Stuttering Due to Disturbances of Respiratory Function.* Valsalva, (Oct., 1933), 9, 777–794.

(To be continued)

THE ANTIQUITY OF SPEECH SCIENCE SYMBOLS

The oldest technical symbols still used by scientists are our phonetic characters. They are, for example, far older than any chemical symbols. Both groups have been added to and modified as our body of knowledge changed and increased and as the years passed by. But in their essentials, technical phonetic symbols have been used by scientists the world over with their present values for more than 2000 years.

m, n, t, θ and k are even much older than that. The m stands for the labial hum. The n for the point-lingual hum. The t for the point-lingual unvoiced stop. The θ for its corresponding fricative. And the k for the unvoiced velar stop.

Scientists use the vowels i, e, a, o, u, with the basic Latin pronunciation values given them at the time of Christ rather than the chaotic values used by the American layman (cf. **at**, **calm**, **ball**, **bathe**). Those Latin values give us a metallic highe pitched ah for a rather than our more common muffled lower pitched Standard American midwestern vowel in **calm** represented by scientists with a script ɑ.

The æ, ɘ, ʊ, ɪ, ʊ, ɛ, ʌ, and ɔ, have been, to say the least, so thoroughly established with their present values during the last century, that they are understood the world over, even tho the layman may find their appearance strange.

p, b, f, v, s, z, g (with its so-called "hard" sound alone accepted), and h, are likewise well over a thousand years old and are fairly free from confusing variation usually resulting from popular usage of technical symbols. The Greek lower case delta and ð are equally old, and while some voiced-unvoiced interchange was current in the oldest English usage of these as well as of the "thorn", that interim of confusion long ago ceased to exist. ʃ is an old symbol, but like ʒ and ʤ may be said to have only had its present acoustic connotation thoroughly established within the last century. ŋ is a symbol which was created about that time and is now quite as precisely understood by scientific investigators of all nationalities.

Such technical symbols have had their present values among scientists of every age, as far back as we can trace them. And they still retain them today. In other words, they have as exact and universally understood a meaning as O for oxygen, H for hydrogen or H_2O for water among chemists.

TO AUTHORS.

Authors referring to sounds, in articles submitted for publication in this Journal, are requested to confine themselves to the following conservative scientific symbols, most of which are thousands of years old, and almost universally used. So our colleagues the world over know exactly what they mean. Besides if we avoid our own and other (even I.P.A.) strange symbols of the last few decades, costs to both author and journal are reduced.

All of the illustrations used below assume norms as widely pronounced in Standard American:

a (night) First element in diphthong aɪ, or as heard in 'Spanish a'

e (main, they, fate)	m (mat, omen, slam)
i (police, seen, lean)	n (net, spin, penny)
o (obey, roast, no)	ŋ (sing, drink, wing)
u (rule, pool, prude)	l (lamb, ally, all)
ɪ (bit, knit, grin)	r (red, vary, chair)
ɛ (met, many, bed)	j (year, onion, your)
æ (hat, black, catch)	w (wait, owe, word)
ɑ (calm, hard, shot)	ʍ (whip, why, which)
ɔ (cloth, off, cough)	v (vase, Slav, over)
ɒ (hall, bawl, moss)	f (for, rough, puffy)
ə (above, idea, the)	ð (the, oaths, other)
ʌ (nun, some, luck)	θ (thin, lath, pithy)
ʊ (foot, push, put)	z (zone, buzz, busy)
ɜ (bird, burn, fern)	s (so, pass, missy)
b (boy, crab, lobby)	ʒ (rouge, pleasure)
p (pan, hop, happy)	ʃ (shy, ash, mushy)
d (day, buddy, mad)	dʒ (John, age, adjoin)
t (trod, hunt, pity)	tʃ (chap, itch, chop)
g (get, brag, buggy)	h (here, ahoy, hurt)
k (call, walk, acne)	ʔ (= a glottal plosive)

˜ (over = nasality) ˛ (under = a fricative)